



Dart Aerospace Ltd.
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D212-664-101TRN
Job Sheet 184701



Part No: D212-664-101TRN

Job Qty: 1 ea

Part Name: Crosstube Turning Detail



Part Weight: 0 lbs

Status: New

Priority: Medium

Job Created: 10/16/18

Job Tracking No:

Due Date: 10/19/18

Created By: Marie Lajeunesse

Type: Stock

Description:

Note: DWG REV E IPP Rev:A 08-03-06 new issue DD verified by:ec IPP Rev B 08.04.02 removed Polish EC verified by: DD

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup Hrs	Run Hrs	Workcenter / Supplier	Lead Time	
90	Start up Operation	1 Ea	10/19/18	10/19/18	0.00	0.00	Start Up Crosstubes-1		MD
100	Mori Seiki	1 pcs	10/19/18	10/19/18	4.40	2.38	Mori Seiki TL-40		MD
110	QC	1 pcs	10/19/18	10/19/18	0.00	0.00	QC2-1		MD
120	Mori Seiki	1 pcs	10/19/18	10/19/18	0.00	2.38	Mori Seiki TL-40		MD
130	QC	1 pcs	10/19/18	10/19/18	0.00	0.00	QC2-1		MD
140	QC	1 pcs	10/19/18	10/19/18	0.00	0.00	QC8		GP 2018-10-22
145	Crosstubes	1 pcs	10/19/18	10/19/18	0.00	0.68	Crosstubes-1		GP
150	HandFXtube	1 pcs	10/19/18	10/19/18	0.00	1.00	Crosstubes-3		GP
160	QC	1 pcs	10/19/18	10/19/18	0.00	0.00	QC7-1		Dez
170	Packaging	1 pcs	10/19/18	10/19/18	0.00	0.00	Packaging3-1		Dez
180	QC21-SA	1 Ea	10/19/18	10/19/18	0.00	0.00	QC21		21 OCT 24 1918

Part Op 100 - 1- Fill tube with sand & install plugs 212-141 on both ends as per Folio FA113 3- Turn first taper section on both
Descriptions: side as per folio FA113

120 - 1- Turn second taper on both side 4- Scribe part # and batch # using vibrating stylus on the cuff as per Dwg D212-664-141

145 - GRIND ONLY TRANSITION LINES SMOOTH LONGITUDE WAY.

150 - 1- handfinish X-TUBE INSIDE AND OUT

170 - LOCATION : LG014

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
D6005-128	Crosstube Material	1 Ea (1 ea)	90-Start up Operation	

B139414

Job Allocations

Operation	Component Part	Required	Inventory	Allocated
90-Start up Operation	D6005-128	1	57	0

Part Specifications

Specifications could not be found.

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS <table style="width: 100%; border: none;"> <tr> <td style="width: 15%;">Skid-tube ☐</td> <td style="width: 15%;">Cross tube ☐</td> <td style="width: 15%;">Water Jet ☐</td> <td style="width: 15%;">Engineering ☐</td> </tr> <tr> <td>Machining ☐</td> <td>Small Fab ☐</td> <td>Prod. Eng. Coord. ☐</td> <td>Quality ☐</td> </tr> <tr> <td>Thermoforming ☐</td> <td>Finishing ☐</td> <td>Rec/Store/Packaging ☐</td> <td>Other ☐</td> </tr> <tr> <td>Large Fab ☐</td> <td>Composite ☐</td> <td>Supplier ☐</td> <td></td> </tr> </table>						Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐			
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Date :		Step #:		QTY Effective :			MRB (QSI042) Approval																				
Description Work Order Deviation				Disposition				Completed By																			
								Lead hand / Supervisor Approval Verification																			
								QC / QA Coordinator Approval																			
				FAULT CATEGORY <table style="width: 100%; border: none;"> <tr> <td style="width: 15%;">☐ Power Loss/Surge</td> <td style="width: 15%;">☐ Positioned Wrong</td> </tr> <tr> <td>☐ Folio/Program</td> <td>☐ Outside Dimensions</td> </tr> <tr> <td>☐ Grain</td> <td>☐ Over/Under tolerance</td> </tr> <tr> <td>☐ Weld</td> <td>☐ Part Incorrect</td> </tr> <tr> <td>☐ Wrong Stock Pulled</td> <td>☐ Part Lost/Missing</td> </tr> <tr> <td>☐ Out of Sequence</td> <td>☐ Part Moved</td> </tr> <tr> <td>☐ Off-set</td> <td>☐ Drawing</td> </tr> <tr> <td>☐ Misabeled</td> <td>☐ Finish</td> </tr> <tr> <td>☐ Fit/Function</td> <td>☐ Misread</td> </tr> <tr> <td>☐ Misaligned/off center</td> <td>☐ Turning Sequence</td> </tr> </table>				☐ Power Loss/Surge	☐ Positioned Wrong	☐ Folio/Program	☐ Outside Dimensions	☐ Grain	☐ Over/Under tolerance	☐ Weld	☐ Part Incorrect	☐ Wrong Stock Pulled	☐ Part Lost/Missing	☐ Out of Sequence	☐ Part Moved	☐ Off-set	☐ Drawing	☐ Misabeled	☐ Finish	☐ Fit/Function	☐ Misread	☐ Misaligned/off center	☐ Turning Sequence
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Container No: S119654



Part: D212-664-101TRN

Job No: 184701

Serial No/Batch: S119654

Revision: E

Inspector:

Exp Date:

Instructions:

Date: 10/18/18

③

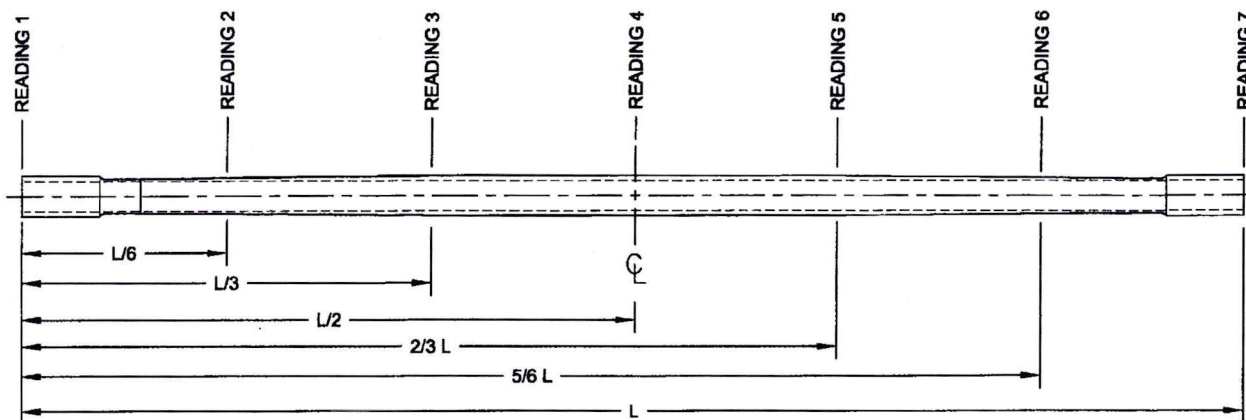
DART AEROSPACE LTD	Work Order:	184701
Description: Crosstube Assembly (205/212/412 High Fwd)	Part Number:	D212-664-141
Inspection Dwg: D212-664-141 Rev: E		Page 1 of 2

FIRST ARTICLE INSPECTION CHECKLIST

	Inspection Sheet Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	0.200	+/-0.010	2.206	✓		CNC-08	
	R0.063	+/-0.010	0.063	✓		RG	
	2.740	+0.005/-0.000	2.743	✓		CNC-04	
	5.097	+/-0.030	5.103	✓		CNC-08	
	2.304	+0.005/-0.000	2.309	✓		CNC-04	
	2.340	+0.005/-0.000	2.345	✓			
	2.398	+0.005/-0.000	2.403	✓			
	2.448	+0.005/-0.000	2.453	✓			
	2.498	+0.005/-0.000	2.503	✓			
	2.549	+0.005/-0.000	2.554	✓			
	2.599	+0.005/-0.000	2.604	✓			
	2.671	+0.005/-0.000	2.676	✓			
	2.701	+0.005/-0.000	2.705	✓			
SIDE B	0.200	+/-0.010	2.208	✓		CNC-08	
	R0.063	+/-0.010	0.063	✓		RG	
	2.740	+0.005/-0.000	2.741	✓		CNC-04	
	5.097	+/-0.030	5.107	✓		CNC-08	
	2.304	+0.005/-0.000	2.309	✓		CNC-04	
	2.340	+0.005/-0.000	2.345	✓			
	2.398	+0.005/-0.000	2.403	✓			
	2.448	+0.005/-0.000	2.453	✓			
	2.498	+0.005/-0.000	2.503	✓			
	2.549	+0.005/-0.000	2.554	✓			
	2.599	+0.005/-0.000	2.604	✓			
	2.671	+0.005/-0.000	2.676	✓			
	2.701	+0.005/-0.000	2.705	✓			
	126.514	+/-0.020	126.530	✓		Tape	

DART AEROSPACE LTD	Work Order: 189701
Description: Crosstube Assembly (205/212/412 High Fwd)	Part Number: D212-664-141
Inspection Dwg: D212-664-141 Rev: E	Page 2 of 2

WALL THICKNESS MEASUREMENT



Location	WALL THICKNESS MEASUREMENT (IN)				Deviation Δw (max-min)	TOLERANCE
	w1	w2	w3	w4		
READING 1 L= 0"	.385	.383	.381	.369	.016	0.048"
READING 2 L= 21.09	.224	.254	.252	.224	.030	
READING 3 L= 42.17	.357	.349	.352	.359	.010	
READING 4 L= 63.25	.382	.392	.383	.382	.010	
READING 5 L= 84.34	.353	.352	.352	.357	.005	
READING 6 L= 105.43	.259	.229	.223	.248	.036	
READING 7 L= 126.514	.382	.380	.373	.379	.009	

Calibration Result

Actual Block Thickness: 200-400

Sitiescan 250 Measured Thickness: 200-400

Measured by: MD	Audited by: GP	Preliminary Approval:
Date: 2018-10-18	Date: 2018-10-22	Date:

Rev	Date	Change	Revised by	Approved
C	07.05.28	Dwg Rev updated (P/O D412-664-101)	KJ/JLM	
D	10.02.02	Dimension 126.514 was 126.51	KJ	
E	12.06.04	Wall thickness form added	KJ	
F	14.06.05	Dwg Rev updated	KJ	

Item	Qty -141	Qty -141B	Qty -141F	Part Number	Description
1	X			D212-664-141	CROSSTUBE ASSEMBLY (205/212/412 HIGH FWD)
2		X		D212-664-141B	CROSSTUBE ASSEMBLY (214 HIGH FWD)
3			X	D212-664-141F	CROSSTUBE ASSEMBLY (205/212/412 HIGH FWD) (ANODIZED)
4	1	1	1	D6005-128	CROSSTUBE
5	2		2	D2893-1	SUPPORT
6	4	4	4	D3595-063-450	RUBBER CUSHION
7		2		D5017-1	SUPPORT
8	4	4	4	MS21920-25	CLAMP (OR MS21920-26)
9	A/R	A/R	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

GENERAL NOTES:

- MATERIAL: MANUFACTURED FROM D6005-128
FINISHED LENGTH = 126.514±0.020
- FINISH -141 & -141B: a) CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
b) PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
c) MASK UNDERSIDE OF CROSSTUBE AS SHOWN (ZN C6-2 / C6-3, HATCHED AREA)
d) PAINT OUTSIDE PER DART QSI 005 4.2
e) REMOVE MASKING AND APPLY MATTE CLEAR COAT
FINISH -141F: a) ANODIZE PER MIL-A-8625, TYPE II, CLASS 1.
b) ALODINE (DO NOT ETCH) PER QSI 005 4.1.2
c) PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
d) MASK UNDERSIDE OF CROSSTUBE AS SHOWN (ZN C6-2 / C6-3, HATCHED AREA)
e) PAINT OUTSIDE PER DART QSI 005 4.2
f) REMOVE MASKING AND APPLY MATTE CLEAR COAT
***NOTE:** BETWEEN FINISHING OPERATIONS EXTREME CARE MUST BE TAKEN NOT TO CONTAMINATE OR DAMAGE FINISHED SURFACES.
- TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- UNITS: INCHES UNLESS OTHERWISE NOTED.
- BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- IDENTIFICATION: SCRIBE DART PART NUMBER 'D212-664-XXX' AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS
- WEIGHT: D212-664-141/-141B/-141F = 33.6 lbs
- PART IS SYMMETRIC ABOUT CENTERLINE.
- EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.

MACHINING

- RUN CUTTER OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.

BENDING

- BEND PROGRESSIVELY WITH A MINIMUM OF 3 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 7.2% (BASED ON O.D.) IN LOWER HALF OF R35.5 BEND AND 6% (BASED ON O.D.) ON REMAINING TUBE.
- LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.

ASSEMBLY

- TO INSTALL D2893-1 / D5017-1 SUPPORT: ABRASE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- INSTALL MS21920-25 CLAMPS (OR -26) WITH D3595-063-450 RUBBER CUSHIONS TO SECURE THE SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE ON TOP SIDE OF CROSSTUBE.
- TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.

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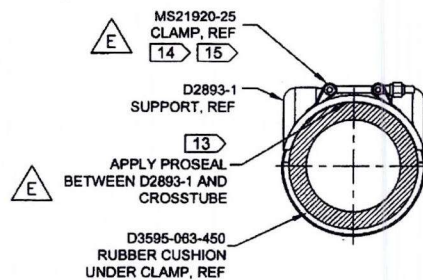
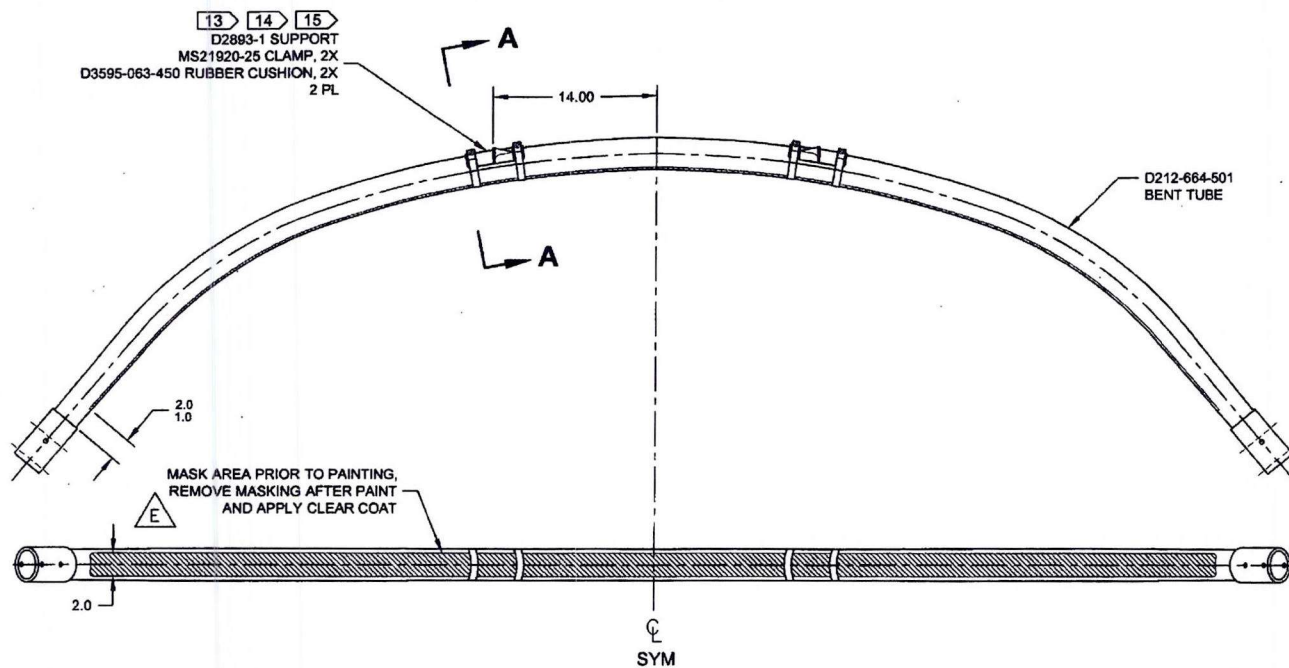
WITHOUT NOTICE
WORK ORDER

NO. 184701 MGS
187076

RELEASED
2014-05-26
WD

E	ADD -141F. D5017-1 WAS D2893-1 (-141B), PROSEAL WAS MAGNOBOND, NOTE 2: ADD INSPECTION WINDOW, NOTE 11: ALLOW 7.2% CRUSH, NOTE 15: ADD 72HR CURE AND RETORQUE FOR PROSEAL, ADD SHEET 3, CLAMPS REVERSED TO PREVENT CHAFING (B7-2, B7-3), BEND HEIGHT TOL. NOW 0.25 WAS 0.13 (C1-3), INCOMP. DEO D-1/-2/-3	CP	14.04.01
D	REFORMAT/REVISE GENERAL NOTES/PART LIST; REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS; ADD -141B (ZN B4-2, D4-2); REMOVED REF & ADD TOLERANCES (ZN B4-3, C6-3, C8-3 & B6-3); RELOCATED FLAG #6 PER PAR 08-046 (ZN A5-3); MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4	RF	09.09.30
C	REMOVE -851 ABRASION STRIP; ADD MAGNOBOND 6398, CUSHION, REVERSE CLAMPS	PH	07.03.08
B	ADD HOLES FOR COMPATIBILITY WITH BHT/AA SKIDTUBES	PH	05.02.04
A	NEW ISSUE	CP	00.12.12
REV.	DESCRIPTION	BY	DATE
DESIGN	DP		
DRAWN	DP		
CHECKED	DW		
MFG. APPR.	DP		
APPROVED	DP		
DE APPR.	DP		
DATE	14.04.01		
DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA DRAWING NO. D212-664-141 REV. E SHEET 1 OF 5 TITLE XTUBE ASS'Y (205/212/412 HI FWD) SCALE NTS COPYRIGHT © 2010 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.			

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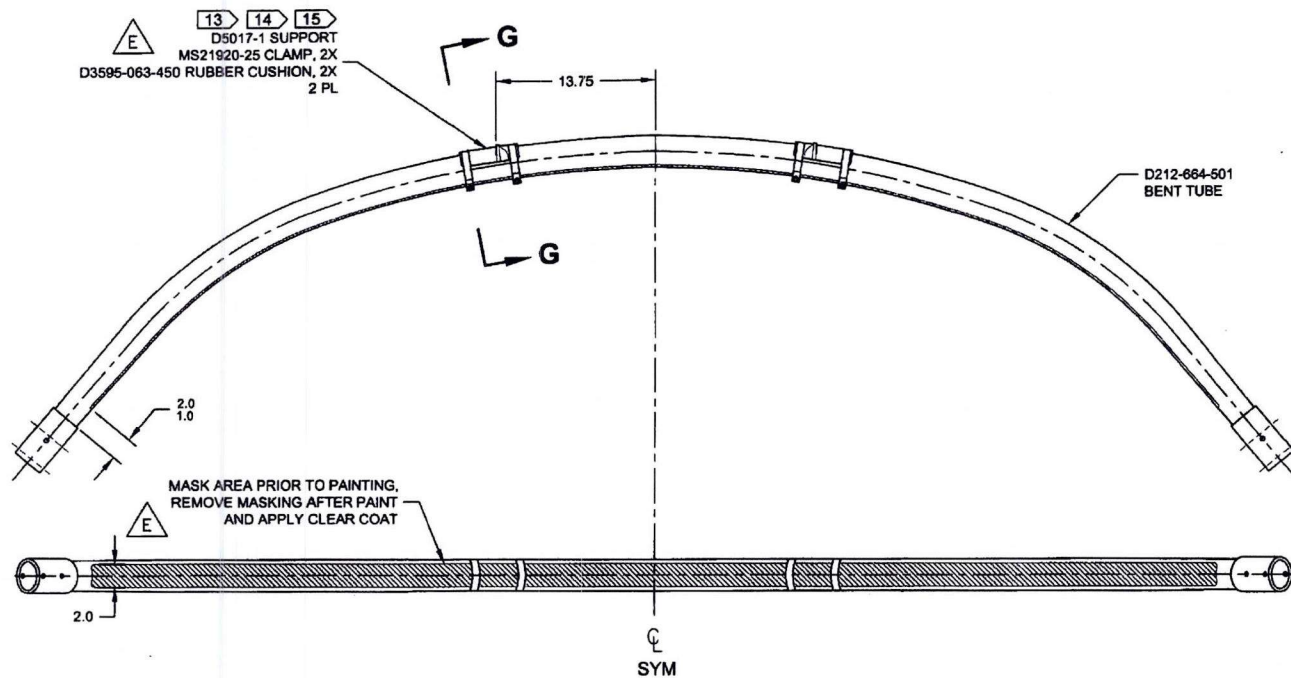
SECTION A-A
SCALE 4X

D212-664-141/-141F
ASSEMBLY DETAIL

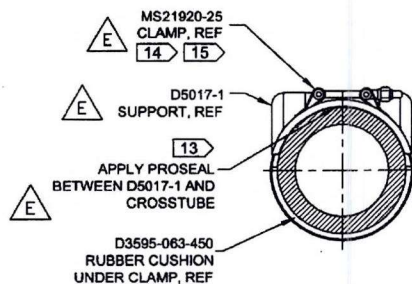
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2014-05-26
AND

DESIGN		DART AEROSPACE LTD	
DRAWN		HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. E
MFG. APPR.		D212-664-141	SHEET 2 OF 5
APPROVED		TITLE	SCALE
DE APPR.		XTUBE ASS'Y (205/212/412 HI FWD)	NTS
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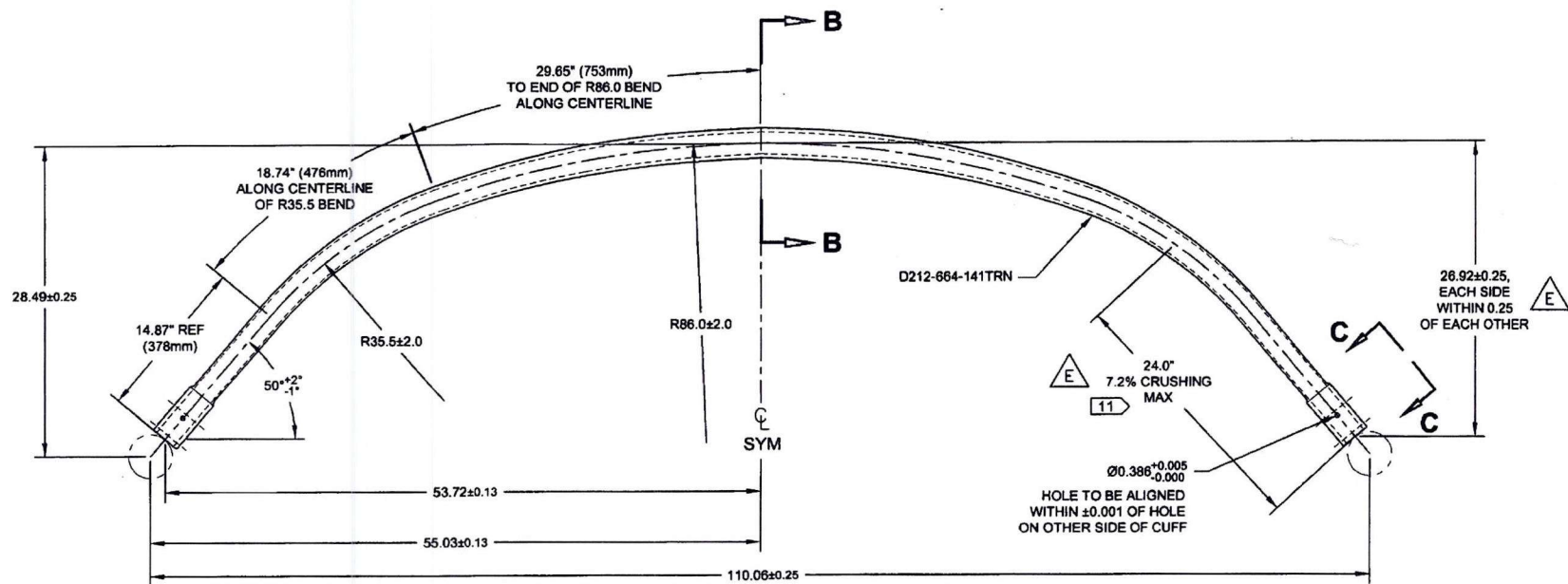
D212-664-141B
ASSEMBLY DETAIL



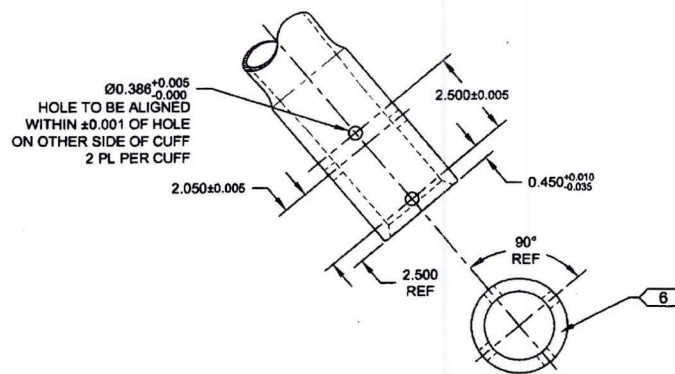
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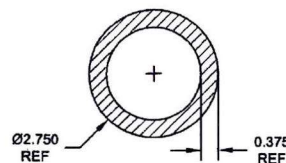
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CHECKED	DW	DRAWING NO.	REV. E
MFG. APPR.		D212-664-141	SHEET 3 OF 5
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D212-664-501
BENDING AND DRILLING DETAIL 11



VIEW C-C: CUFF DETAIL
SCALE 3X



SECTION B-B
SCALE 4X

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2014-05-26

DESIGN	92	DART AEROSPACE LTD	
DRAWN	92	HAWKESBURY, ONTARIO, CANADA	
CHECKED	92	DRAWING NO.	REV. E
MFG. APPR.	92	D212-664-141	SHEET 4 OF 5
APPROVED	92	TITLE	SCALE
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